We claim:

1. An accessor moveably disposed in a data storage and retrieval system, wherein said data storage and retrieval system includes one or a plurality of portable data storage media, comprising:

an accessor controller;

a work queue stored in said accessor controller, wherein said work queue comprises one or more work requests;

an inventory stored in said accessor controller, wherein said inventory comprises the identity of each of said one or a plurality of portable data storage media;

wherein said accessor controller creates and maintains said inventory and said work queue.

2. The accessor of claim 1, wherein said work queue further comprises one or more work entries, wherein said one or more work entries are created by said accessor controller, and wherein each of said one or more work entries comprises one of said one or more work requests.

3. The accessor of claim 2, wherein said accessor further comprises an accessor identifier, and wherein each of said one or more work entries comprises:

the accessor identifier for the accessor performing that work entry; and

the status of that work entry.

4. The accessor of claim 3, wherein said status is selected from the group consisting of active, completed, completed with permanent error, pending, and error recovery.

5. The accessor of claim 1, further comprising:

a lifting servo section comprising;

a centering cam;

a centering plunger, wherein said centering plunger has a first end and a second end, and

wherein said first end extends outwardly from said lifting servo section and said second end is disposed adjacent said centering cam.

6. The accessor of claim 5, further comprising:

a gripper mechanism frame disposed on said centering cam; and

a gripper mechanism disposed on said gripper mechanism frame.

7. An accessor moveably disposed in a data storage and retrieval system, wherein said data storage and retrieval system includes one or a plurality of portable data storage media, comprising:

an accessor controller;

a work queue stored in said accessor controller;

an inventory stored in said accessor controller;

a lifting servo section comprising;

a centering cam;

a centering plunger, wherein said centering plunger has a first end and a second end, and wherein said first end extends outwardly from said lifting servo section and said second end is disposed adjacent said centering cam;

a gripper mechanism frame disposed on said centering cam; and

a gripper mechanism disposed on said gripper mechanism frame.

8. A data storage and retrieval system, comprising:

one or a plurality of portable data storage media;

two or more accessors moveably disposed therein;

a data and control network;

wherein each of said two or more accessors communicate with one another using said data

and control network, and wherein each of said two or more accessors comprises:

an accessor controller;

a work queue stored in said accessor controller;

an inventory stored in said accessor controller, wherein said inventory comprises the identity of each of said one or a plurality of portable data storage media;

wherein said accessor controller creates and maintains said inventory and said work queue.

9. The data storage and retrieval system of claim 8, wherein said data storage and retrieval system is capable of communication with one or more host computers, and wherein one or more of said one or more work requests are provided by said one or more host computers.

10. The data storage and retrieval system of claim 8, further comprising an operator input station, wherein said two or more accessors and said operator input station communicate using said data and control network, and wherein one or more of said one or more work requests are provided by said operator input station.

11. The data storage and retrieval system of claim 8, wherein said two or more accessors each further comprise:

a lifting servo section comprising;

a centering cam;

a centering plunger, wherein said centering plunger has a first end and a second end, and wherein said first end extends outwardly from said lifting servo section and said second end is disposed adjacent said centering cam.

12. The data storage and retrieval system of claim 11, wherein said two or more accessors each further comprise:

a gripper mechanism frame disposed on said centering cam; and

a gripper mechanism disposed on said gripper mechanism frame.

13. A method to perform a work request provided to a data storage and retrieval system, wherein said data storage and retrieval system includes two or more moveable accessors in communication with one another and two or more accessor controllers, wherein each accessor comprises an accessor controller and a work queue stored in that accessor controller, and wherein said two or more accessors include a first accessor and one or more remaining accessors, said method comprising the steps of:

providing a work request to each of said two or more accessors;

creating by each of said two or more accessor controllers a pending work entry comprising said work request;

adding said pending work entry to the work queue stored in each of said two or more accessor controllers;

communicating a notification from said first accessor to said remaining accessors that said first accessor is initiating said pending work entry;

acknowledging said notification by said one or more remaining accessors;

reporting by said first accessor to said one or more remaining accessors the status of said pending work entry; and

updating the work queue disposed in each of said two or more accessors to include the status of said pending work entry.

14. The method of claim 13, wherein said data storage and retrieval system is capable of communication with one or more host computers, further comprising the step of providing said work request by said one or more host computers.

15. The method of claim 13, wherein said data storage and retrieval system further

comprises an operator input station, further comprising the step of providing said work request by said operator input station.

16. The method of claim 13, wherein said data storage and retrieval system further comprises an import/export controller, further comprising the step of providing said work request by said import/export controller.

17. The method of claim 13, further comprising the steps of:

reporting by said first accessor to each of said one or more remaining accessors the completion of said pending work entry; and

updating the work queue disposed in each of said one or more accessors to indicate the completion of said pending work entry.

18. A method to provide failover protection in a data storage and retrieval system in the event of an accessor failure, wherein said data storage and retrieval system includes a garage, one or more portable data storage media, two or more moveable accessors, and two or more accessor controllers, wherein said two or more accessors can communicate with one another, and wherein each of said two or more accessors comprises an accessor controller and a work queue stored in that accessor controller, and wherein said two or more accessors include a first accessor and one or more remaining accessors, said method comprising the steps of:

providing a work request to each of said two or more accessors;

creating by each of said two or more accessor controllers a pending work entry comprising said work request;

adding said pending work entry to the work queue stored in each of said two or more accessor controllers;

communicating a notification from said first accessor to said one or more remaining

accessors that said first accessor is initiating said pending work entry;

acknowledging said notification by each of said remaining accessors;

determining if said first accessor reports completion of said pending work entry; and

determining if said first accessor can communicate with said one or more remaining accessors.

19. The method of claim 18, said method further comprising the steps of:

determining if said first accessor has completed said pending work entry; and

determining if said first accessor has a portable data storage medium releaseably attached thereto.

20. The method of claim 19, wherein said first accessor has completed said pending work entry, and wherein said first accessor does not have a portable data storage medium releaseably attached thereto, said method further comprising the steps of:

pushing said first accessor into said garage using a second accessor, wherein said second accessor comprises one of said one or more remaining accessors;

updating the work queue disposed in each of said remaining accessors to indicate that said pending work entry is completed; and

providing an error message.

21. The method of claim 19, wherein said pending work entry has not been completed, and wherein said first accessor does not have a data storage medium releaseably attached thereto, further comprising the steps of:

pushing said first accessor into said garage using a second accessor, wherein said second accessor comprises one of said one or more remaining accessors;

updating the work queue disposed in each of said remaining accessors to indicate that said

pending work entry remains pending; and

providing an error message.

22. The method of claim 19, wherein said pending work entry has not been completed, and wherein said first accessor has a portable data storage medium releaseably attached thereto, further comprising the steps of:

pushing said first accessor into said garage using a second accessor, wherein said second accessor comprises one of said one or more remaining accessors;

extracting said portable data storage medium from said first accessor using said second accessor;

completing said pending work entry;

communicating the completion of said pending work entry to each of said one or more remaining accessors;

updating the work queue disposed in each of said one or more remaining accessors to indicate that said pending work entry is completed; and

providing an error message.

23. The method of claim 22, wherein said first accessor further comprises:

a lifting servo section;

a centering cam disposed on said lifting servo section;

a centering plunger, wherein said centering plunger has a first end and a second end, and wherein said first end extends outwardly from said lifting servo section and said second end is disposed adjacent said centering cam;

said method further comprising the steps of:

impacting said centering cam with said centering plunger; and

rotating said centering cam about 90 degrees.

24. The method of claim 18, wherein said pending work entry includes retrieving a designated one of said one or more portable data storage media, further comprising the steps of:

repositioning said first accessor;

attempting to retrieve said designated portable data storage medium;

determining if said designated portable data storage medium was successfully retrieved;

operative if said designated portable data storage medium was successfully retrieved, completing said pending work entry using said first accessor; and

operative if said designated portable data storage medium was not successfully retrieved, providing an error message that said designated portable data storage medium was not retrieved.

25. The method of claim 18, wherein said data storage and retrieval system further comprises a data storage device, and wherein pending work entry includes inserting a designated one of said one or more portable data storage media in said data storage device, said method further comprising the steps of:

repositioning said first accessor;

attempting to insert said designated portable data storage medium in said data storage device;

determining if said designated portable data storage medium was successfully inserted in said data storage device; and

operative if said designated portable data storage medium was not successfully inserted in said data storage device, providing an error message.

26. The method of claim 18, further comprising the steps of:

detecting by said first accessor a mechanical failure;

communicating said mechanical failure to each of said remaining accessors;

moving said first accessor to said garage;

operative if said pending work entry has been completed, updating said work queue to indicate that said pending work entry is completed;

operative if said pending work entry has not been completed, updating said work queue to indicate that said pending work entry remains pending; and

providing an error message.

27. The method of claim 26, wherein said first accessor has a portable data storage medium releaseably attached thereto, further comprising the step of:

extracting said data storage medium from said first accessor using one of said one or more remaining accessor;

completing said pending work entry;

updating said work queue to indicate that said pending work entry is completed; and

providing an error message.

28. The method of claim 18, further comprising the steps of:

detecting by said first accessor a logical error;

communicating said logical error to each of said remaining accessors;

moving said first accessor to said garage;

operative if said pending work entry has been completed, updating said work queue to indicate that said pending work entry is completed;

operative if said pending work entry has not been completed, updating said work queue to indicate that said pending work entry remains pending; and

providing an error message.

29. The method of claim 28, wherein said first accessor has a data storage medium releaseably attached thereto, further comprising the steps of:

extracting said data storage medium from said first accessor using one of said one or more remaining accessors;

completing said pending work entry;

updating said work queue to indicate that said pending work entry is completed; and

providing an error message.

30. The method of claim 18, wherein said pending work entry comprises retrieving a designated portable data storage medium from a source location and disposing that designated portable data storage medium in a destination location, further comprising the steps of:

determining if said designated portable data storage medium is releaseably attached to said first accessor;

operative if said designated portable data storage medium is not releaseably attached to said first accessor, determining if said designated portable data storage medium is disposed in said source location;

operative if said designated portable data storage media is not releaseably attached to said first accessor, and if said designated portable data storage medium is not disposed in said source location, determining if said designated portable data storage medium is disposed in said destination location;

operative if said designated portable data storage media is not releaseably attached to said first accessor, and if said designated portable data storage medium is not disposed in said source location, and if said designated portable data storage medium is not disposed in said destination location, determining that said designated portable data storage medium is on the floor of said data

storage and retrieval system; and

providing an error message to the system user.

31. A method to add a portable data storage medium to a data storage and retrieval system, wherein said data storage and retrieval system comprises an accessor, an import/export station, and a plurality of storage slots, wherein said accessor comprises an accessor controller comprising an inventory of portable data storage media stored in said data storage and retrieval system, said method comprising the steps of:

disposing a designated portable data storage medium in said import / export station;

retrieving said designated portable data storage medium;

determining identification information for said designated portable data storage medium;

assigning by said accessor controller a storage location, wherein said storage location comprises one of said plurality of storage slots; and

adding by said accessor controller said identification information and said storage location to said inventory.

32. The method of claim 31, wherein said accessor comprises a bar code reader and wherein said designated portable data storage medium comprises a bar code, wherein said determining step further includes the step of reading said bar code using said bar code reader.

33. The method of claim 31, wherein said data storage and retrieval system further comprises a data storage device, wherein said determining step further comprises the steps of:

removeably disposing said designated portable data storage medium in said data storage device; and

receiving said identification information from said data storage device.

34. A data storage and retrieval system comprising a computer useable medium having

computer readable program code disposed therein to provide failover protection in a data storage and retrieval system, wherein said data storage and retrieval system includes a garage, one or a plurality of portable data storage media, two or more moveable accessors, two or more accessor controllers, wherein said two or more accessors can communicate with one another, wherein each of said two or more accessors comprises an accessor controller and a work queue stored in that accessor controller, and wherein said two or more accessors include a first accessor and one or more remaining accessors, the computer readable program code comprising a series of computer readable program steps to effect:

providing a work request to each of said two or more accessors;

creating by each of said two or more accessor controllers a pending work entry comprising said work request;

adding said pending work entry to the work queue stored in each of said two or more accessor controllers;

communicating a notification from said first accessor to said one or more remaining accessors that said first accessor is initiating said pending work entry;

acknowledging said notification by each of said remaining accessors;

determining if said first accessor reports completion of said pending work entry; and

determining if said first accessor can communicate with said one or more remaining accessors.

35. The data storage and retrieval system of claim 34, said computer readable program code further comprising a series of computer readable program steps to effect:

determining if said first accessor has completed said pending work entry; and

determining if said first accessor has a portable data storage medium releaseably attached

thereto.

36. The data storage and retrieval system of claim 35, said computer readable program code further comprising a series of computer readable program steps to effect:

pushing said first accessor into said garage;

updating the work queue disposed in each of said remaining accessors to indicate the status of said pending work entry; and

providing an error message.

37. The data storage and retrieval system of claim 36, said computer readable program code further comprising a series of computer readable program steps to effect:

extracting said portable data storage medium from said first accessor using one of said one or more remaining accessors;

completing said pending work entry;

communicating the completion of said pending work entry to each of said remaining accessors;

updating the work queue disposed in each of said one or more remaining accessors to indicate that said pending work entry is completed; and

providing an error message.

38. The data storage and retrieval system of claim 34, wherein said pending work entry includes retrieving a designated one of said one or a plurality of data storage media, said computer readable program code further comprising a series of computer readable program steps to effect:

repositioning said first accessor;

attempting to retrieve said designated portable data storage medium;

determining if said designated portable data storage medium was successfully retrieved;

operative if said designated portable data storage medium was successfully retrieved, completing said pending work entry using said first accessor; and

operative if said designated portable data storage medium was not successfully retrieved, providing an error message that said designated portable data storage medium was not retrieved.

39. The data storage and retrieval system of claim 34, wherein said data storage and retrieval system further comprises a data storage device, and wherein pending work entry includes inserting a designated one of said one or a plurality of data storage media in said data storage device, said computer readable program code further comprising a series of computer readable program steps to effect:

repositioning said first accessor;

attempting to insert said designated portable data storage medium in said data storage device;

determining if said designated portable data storage medium was successfully inserted; and

operative if said designated portable data storage medium was not successfully inserted, providing an error message.

40. The data storage and retrieval system of claim 34, said computer readable program code further comprising a series of computer readable program steps to effect:

detecting by said first accessor a mechanical failure;

communicating said mechanical failure to each of said one or more remaining accessors;

moving said first accessor to said garage;

updating said work queue to indicate the status of said pending work entry pending work entry; and

providing an error message.

41. The data storage and retrieval system of claim 34, said computer readable program code further comprising a series of computer readable program steps to effect:

detecting by said first accessor a logical error;

communicating said logical error to each of said remaining accessors;

moving said first accessor to said garage;

updating said work queue to indicate that said pending work entry remains pending; and

providing an error message.

42. The data storage and retrieval system of claim 34, wherein said first accessor further comprises:

a lifting servo section;

a centering cam disposed on said lifting servo section;

a centering plunger, wherein said centering plunger has a first end and a second end, and wherein said first end extends outwardly from said lifting servo section and said second end is disposed adjacent said centering cam;

wherein said computer readable program code further comprises a series of computer readable steps to effect causing said centering cam to impact said centering plunger.

43. The data storage and retrieval system of claim 34, wherein said pending work entry comprises retrieving a designated portable data storage medium from a source location and disposing that designated portable data storage medium in a destination location, wherein said computer readable program code further comprises a series of computer readable steps to effect:

determining if said designated portable data storage medium is releaseably attached to said first accessor;

operative if said designated portable data storage medium is not releaseably attached to said

first accessor, determining if said designated portable data storage medium is disposed in said source location;

operative if said designated portable data storage media is not releaseably attached to said first accessor and if said designated portable data storage medium is not disposed in said source location, determining if said designated portable data storage medium is disposed in said destination location;

operative if said designated portable data storage media is not releaseably attached to said first accessor and if said designated portable data storage medium is not disposed in said source location and if said designated portable data storage medium is not disposed in said destination location, determining that said designated portable data storage medium is on the floor of said data storage and retrieval system; and

providing an error message to the system user.

44. A data storage and retrieval system comprising a computer useable medium having computer readable program code disposed therein to add a designated portable data storage medium to a data storage and retrieval system, wherein said data storage and retrieval system comprises an accessor, an import/export station, and a plurality of storage slots, wherein said accessor comprises an accessor controller and an inventory of portable data storage media disposed in said data storage and retrieval system, the computer readable program code comprising a series of computer readable program steps to effect:

retrieving a designated portable data storage medium disposed in said import/export station;

determining identification information for said designated portable data storage medium;

assigning a storage location, wherein said storage location comprises one of said plurality of storage slots; and

adding said storage location to said inventory.

45. The data storage and retrieval system of claim 44, wherein said accessor comprises a bar code reader and wherein said designated portable data storage medium comprises a bar code, wherein said computer readable program code further comprises a series of computer readable program steps to effect reading said bar code using said bar code reader.

46. The data storage and retrieval system of claim 44, wherein said data storage and retrieval system further comprises a data storage device, wherein said computer readable program code further comprises a series of computer readable program steps to effect:

removeably disposing said designated portable data storage medium in said data storage device; and

receiving said identification information from said data storage device.

47. A method to remove a data storage medium from a data storage and retrieval system, wherein said data storage and retrieval system comprises a plurality of storage cells, an import / export station, two or more moveable accessors in communication with one another, and two or more accessor controllers, wherein each accessor comprises an accessor controller, a work queue stored in that accessor controller and an inventory stored in that accessor controller, and wherein said two or more accessors include a first accessor and one or more remaining accessors, said method comprising the steps of:

providing a work request to each of said two or more accessors, wherein said work request comprises removing a designated data storage medium from said data storage and retrieval system;

creating by each of said two or more accessor controllers a pending work entry comprising said work request;

adding said pending work entry to the work queue stored in each of said two or more

accessor controllers;

retrieving by said first accessor said designated data storage medium;

transporting said designated data storage medium to said import / export station;

disposing said new data storage medium in said import / export station;

removing said designated data storage medium from said inventory disposed in each of said two or more accessors; and

updating the work queue disposed in each of said two or more accessors to completion of said pending work entry.

48. The method of claim 47, wherein said data storage and retrieval system further comprises an import / export controller, wherein said work request is provided by said import / export controller.

49. The method of claim 47, wherein said data storage and retrieval system further comprises an operator input station, wherein said work request is provided by said operator input station.

50. The method of claim 47, further comprising the step of determining identification information for said designated data storage medium.

51. The method of claim 50, wherein said data storage and retrieval system further comprises a data storage device, further comprising the step of removeably disposing said designated data storage medium in said data storage device.

52. The method of claim 50, wherein said designated data storage medium comprises a bar code and wherein said first accessor comprises a bar code reader, said method further comprising the step of reading said bar code using said bar code reader.

53. A data storage and retrieval system comprising a computer useable medium having

computer readable program code disposed therein to remove a portable data storage media from a data storage and retrieval system, wherein said data storage and retrieval system comprises a plurality of storage cells, an import / export station, two or more moveable accessors in communication with one another, and two or more accessor controllers, wherein each accessor comprises an accessor controller, a work queue stored in that accessor controller and an inventory stored in that accessor controller, and wherein said two or more accessors include a first accessor and one or more remaining accessors, the computer readable program code comprising a series of computer readable program steps to effect:

providing a work request to each of said two or more accessors, wherein said work request comprises removing a designated data storage medium from said data storage and retrieval system;

creating by each of said two or more accessor controllers a pending work entry comprising said work request;

adding said pending work entry to the work queue stored in each of said two or more accessor controllers;

retrieving by said first accessor said designated data storage medium;

transporting said designated data storage medium to said import / export station;

disposing said new data storage medium in said import / export station;

removing said designated data storage medium from said inventory disposed in each of said two or more accessors; and

updating the work queue disposed in each of said two or more accessors to completion of said pending work entry.

54. The data storage and retrieval system of claim 53, wherein said data storage and retrieval system further comprises an import / export controller, wherein said computer readable

program code further comprises a series of computer readable program steps to effect providing said work request by said import / export controller.

55. The data storage and retrieval system of claim 53, wherein said data storage and retrieval system further comprises an operator input station, wherein said computer readable program code further comprises a series of computer readable program steps to effect providing said work request by said operator input station.

56. The data storage and retrieval system of claim 53, wherein said computer readable program code further comprises a series of computer readable program steps to effect determining identification information for said designated data storage medium.

57. The data storage and retrieval system of claim 56, wherein said data storage and retrieval system further comprises a data storage device, wherein said computer readable program code further comprises a series of computer readable program steps to effect removeably disposing said designated data storage medium in said data storage device.

58. The data storage and retrieval system of claim 56, wherein said designated data storage medium comprises a bar code and wherein said first accessor comprises a bar code reader, wherein said computer readable program code further comprises a series of computer readable program steps to effect reading said bar code using said bar code reader.

59. A method to return a first accessor to service in a data storage and retrieval system, wherein said data storage and retrieval system comprises a garage, two or more moveable accessors in communication with one another, and two or more accessor controllers, wherein each accessor comprises an accessor controller, a work queue stored in that accessor controller, and an inventory stored in that accessor controller, and wherein said two or more accessors include a first accessor and one or more remaining accessors, and wherein said first accessor is moveably disposed in said

garage, said method comprising the steps of:

erasing the work queue disposed in said first accessor;

erasing the inventory disposed in said first accessor;

copying by the accessor controller disposed in said first accessor the work queue disposed in one of said remaining accessors;

copying by the accessor controller disposed in said first accessor the inventory disposed in one of said remaining accessors; and

signaling said remaining accessors by said first accessor that said first accessor is operational.

60. A data storage and retrieval system comprising a computer useable medium having computer readable program code disposed therein to return a first accessor to service, wherein said data storage and retrieval system comprises a garage, two or more moveable accessors in communication with one another, and two or more accessor controllers, wherein each accessor comprises an accessor controller, a work queue stored in that accessor controller and an inventory stored in that accessor controller, and wherein said two or more accessors include a first accessor and one or more remaining accessors, and wherein said first accessor is moveably disposed in said garage, the computer readable program code comprising a series of computer readable program steps to effect:

erasing the work queue disposed in said first accessor;

erasing the inventory disposed in said first accessor;

copying by the accessor controller disposed in said first accessor the work queue disposed in one of said remaining accessors;

copying by the accessor controller disposed in said first accessor the inventory disposed in

one of said remaining accessors; and

signaling said remaining accessors by said first accessor that said first accessor is operational.